

What Is Aluminum Foil Made Of? Composition, Properties & Uses

1. Introduction: More Than Just a Thin Sheet of Metal

Aluminum foil may look simple ? but beneath its shiny surface lies a carefully engineered material critical to industries like packaging, electronics, HVAC, and energy. Yet many buyers face frustrating issues when sourcing foil: from surface defects and delivery delays to inconsistent performance and lack of technical support.

So before you order another roll, let?s dive deep into what aluminum foil is made of, its key properties, typical applications ? and how to avoid common pitfalls buyers encounter.

2. What Is Aluminum Foil Made Of?

At its core, aluminum foil is made of nearly pure aluminum (typically 98.5% to 99.5%). During manufacturing, small amounts of other elements are added to improve strength, flexibility, or corrosion resistance ? depending on the foil's intended use.

Foils like 8011, 3003, or 8021 include different elements depending on whether they are used for food packaging, pharmaceuticals, or battery applications. Want to know which alloy suits your product best? Stay tuned ? we?ll break down 8011, 3003, 8021 and more in an upcoming post.

3. Key Properties of Aluminum Foil

Thanks to its pure aluminum base and micro-thin structure, foil exhibits a unique combination of properties that make it irreplaceable in many applications.

- ? Lightweight: Easy to transport and integrate into packaging
- ? Barrier Properties: Blocks out moisture, gases, UV, light, and bacteria
- ? Flexible: Easily bends, folds, or wraps without breaking
- ? Non-toxic & Food Safe: Approved for direct food contact (when certified)
- ? Heat Conductive: Efficient for cooking, insulation, and heat exchange
- ? Corrosion-Resistant: Naturally forms a protective oxide layer

4. Common Applications of Aluminum Foil

Aluminum foil is found almost everywhere ? not just in your kitchen drawer.

- ? Food & Beverage: Wrapping, lids, trays, flexible pouches, chocolate wrap
- ? Pharmaceuticals: Blister packs, strip packs, cold-formed foil (e.g. 8021)
- ? HVAC & Construction: Thermal insulation, pipe wrap, radiant barriers
- ? Electronics: Capacitor foil, cable shielding, EMI protection
- ? Battery & Energy: Cathode current collectors in lithium batteries (e.g. 1235, 1060)

5. Buyer Pain Points (and Engineering-Backed Solutions)

? Pain Point 1: Poor Thickness Uniformity & Pinholes

? Our Solution: Foil rolled with auto-gauge control & pinhole detector (?20 pinholes/m² for food-grade)

? Pain Point 2: Incompatible Roll Sizes for Machinery

? Our Solution: Custom roll width (100?1600 mm), coil ID (76 mm or 152 mm), and coil OD up to 1000 mm

? Pain Point 3: Lack of Alloy Guidance

? Our Solution: Technical consulting & application-specific foil selection (e.g. 8021 for cold forming pharma, 1235 for household wrap)

? Pain Point 4: No Certification / Traceability

? Our Solution: Full batch traceability + compliance with FDA, SGS, ISO 9001, ISO 14001, RoHS, Reach

? Pain Point 5: Surface Issues (Scratches, Oil, Burrs)

? Our Solution: Surface guaranteed oil-free, no scratches or roller marks; slit edges burr-free

6. FAQs

Q: What is aluminum foil made of?

A: ?98.5% pure aluminum with trace elements like iron, silicon, manganese.

Q: What are common foil alloys?

A: 8011 (food/pharma), 3003 (insulation), 8021 (battery), 1235 (household).

Q: What is the typical thickness?

A: 6?m?200?m (battery to industrial use).

Q: Certifications to expect?

A: FDA, RoHS, ISO 9001, ISO 14001, SGS/BV.

Q: Customizable aspects?

A: Thickness, width, coil ID/OD, surface.

Q: How to avoid quality issues?

A: Choose suppliers with inspection, traceability, and proper QA.

7. Is Aluminum Foil Recyclable?

Yes ? aluminum foil is 100% recyclable and can be reused infinitely with no quality loss.

? Tip: Foil must be clean and food-free to be recycled.

8. Conclusion

Aluminum foil may seem simple, but its composition, properties, and performance vary by application. Whether wrapping chocolate, insulating pipelines, or producing lithium batteries ? choosing the right foil matters.

At Gengfei Steel, we offer more than products ? we offer technical support, fast delivery, and precision quality to help you meet your goals.

9. Contact Us

Need help choosing the right aluminum foil or grade?

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